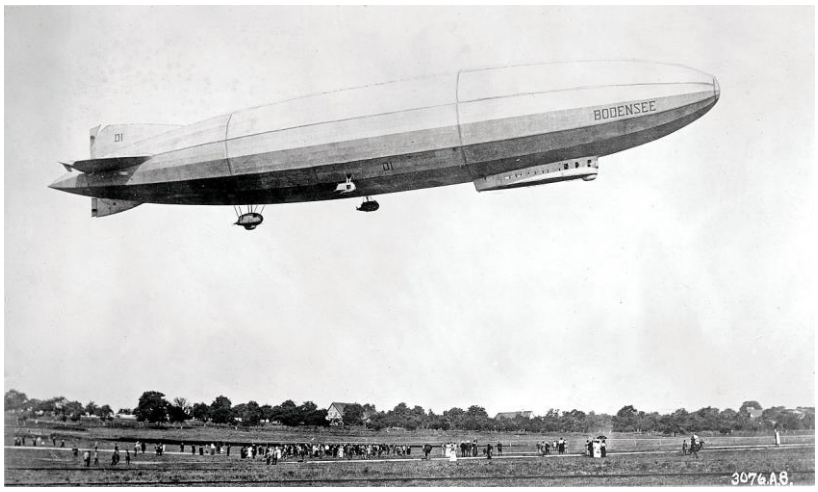
Peterborough Wireless Station in WWI and After

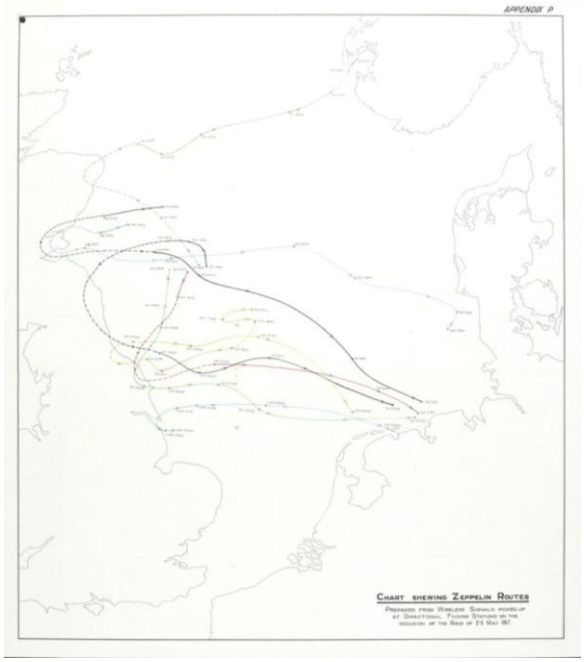
Excerpt from the National Archives

As the First World War raged, governments harnessed modern technologies to give them an advantage in conflict. New inventions – from tanks to Zeppelins – appeared on the battlefield, while existing technologies were adapted to fit the needs of the British war effort. As a result of the need to exchange information faster and more efficiently, telecommunications advanced rapidly at this time. The Engineering Department of the General Post Office, a government body that became British Telecom (BT), played a major role in innovation in telecommunications, as well as supplying the British military and civilians with ways of communicating.

German First World War Zeppelin Airship



The First World War famously saw the creation of the Royal Air Force. Air warfare demanded further evolution in telecommunications, keeping pilots updated while in the air with intelligence-gathering and decision-making was crucial to operational success. The Engineering Department was not only important for the Western Front; it had a crucial role in keeping Britain as safe as possible. It provided key equipment to intercept and report the wireless signals that enemy aircraft, including Zeppelins, often used to navigate. This was done at the Department's Direction Finding Stations at Peterborough, Seaham Harbour, Westgate-on-Sea and Falkirk in Scotland. When the location of enemy aircraft was identified, the information was wired to the Intelligence Department of the War Office.



The Chief Engineer at the Post Office during WWI, Sir William Slingo, produced a report which included a map (left) indicating the routes of Zeppelins that took part in a raid on 2nd and 3rd May 1917.

Excerpt from the GCHQ Website

Whilst the Battle of Britain is firmly lodged in the British psyche, German air raids and the British response during World War I are relatively unknown. This is not surprising - although night-time raids by Zeppelins and aeroplanes, and for a period in 1917 daylight aeroplane raids, caused public fear and outrage, they were strategically insignificant and no threat to national survival. But, like the Battle of Britain, this was an air defence campaign fought at the leading edge of

technology and Britain's response, including the use of Signals Intelligence, laid the foundations for World War II.

The army was given control of the air defence of Great Britain in June 1916 - until then responsibility had been untidily split between the Admiralty and the War Office with their respective Signals Intelligence organisations, Room 40 and M.I.1(b), both working against aircraft communications. As part of the new arrangements the areas of M.I.1 (b) responsible for wireless interception, direction finding (D/F) and traffic analysis were split off into a new section called M.I.1 (e), with support to air defence as its main operational task.

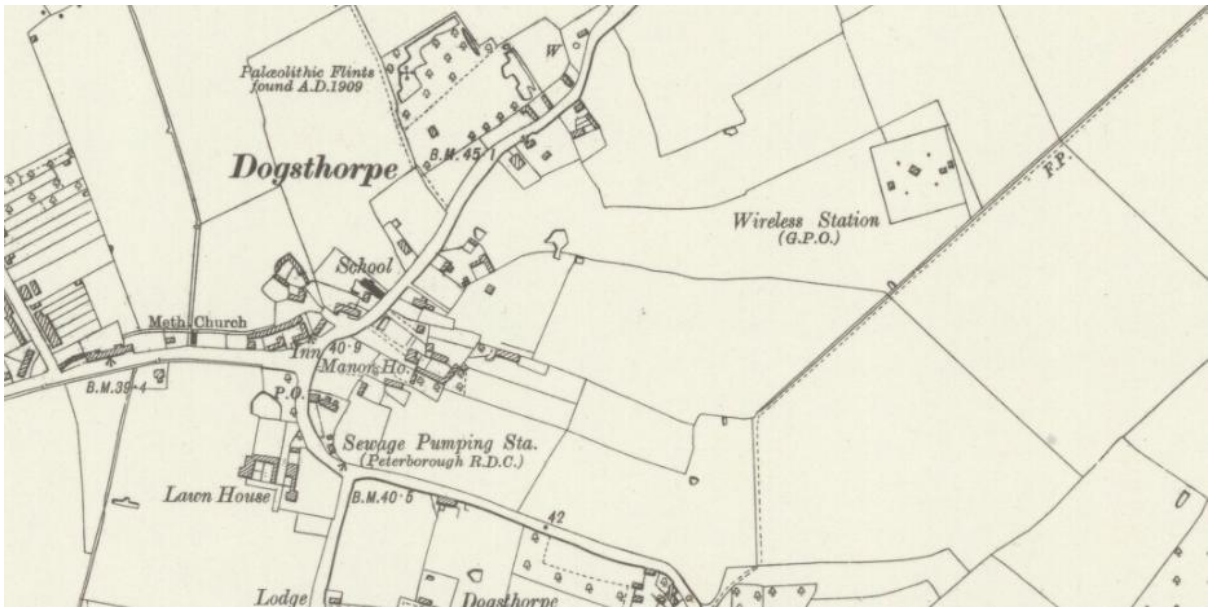
M.I.1 (e) was headed by Major Adrian Simpson, who at the outbreak of WWI was the managing director of the Marconi wireless company's Russian subsidiary. After a period spent trying (largely unsuccessfully) to improve Russian communications and communications security he returned to Britain in 1915 and joined M.I.1 (b). Simpson was an enterprising character, as one of his officers recalled: "*If he wanted something and the War Office refused it, he tried the Admiralty, who generally granted it to score off the War Office. If the Senior Service failed there was still the Air Force, or even the Post Office, which last he actually persuaded to put up three direction-finding stations at their own expense and to provide all the men to run them.*"

M.I.1 (e)'s main intercept site was at Devizes, taking advantage of aerials erected before the war as part of the Imperial Wireless system, with D/F carried out by small purpose built sites at Peterborough, Westgate-on-Sea, Leiston, Seaham Harbour, Falkirk and on the War Office roof, the last using an "8 foot square wooden frame aerial on a scaffolding pole - rotated mainly by a motor car wheel and brute force".

The arrow in the image above is pointing to what is believed to be the D/F aerial at Peterborough Wireless Station in Dogsthorpe, seen from Garton End Road. The aerial would have stood on land which was later used to build John Mansfield School.

Working in cooperation with British and French Signals Intelligence units in France and with Room 40, M.I.1(e) was able to give advance warning of air attacks and then track the raiders' approach using D/F. They were helped by the difficulties of night-time navigation - to fix their positions German aircraft often made transmissions intended to allow their own D/F system to locate them and inform them of their whereabouts, an obvious windfall for the British.

M.I.1(e)'s reporting, together with information from ground observers and sound location, was fed into a plotting and command system - the London Air Defence Area (LADA) - whose structure and efficiency in 1918 matched that of Fighter Command in 1940; but however good the system for collecting and plotting information, the defenders' ability to respond was limited by technology. The lack of accurate real time positional information (D/F did not provide pinpoint accuracy) and, until very late in the war, the absence of radio communications with aircraft meant fighters could not be vectored to an intercept 1940-style, but could only be launched to operate on the general track of raids. By 1918 the British were destroying about 10% of the aircraft launched against them, but far more were lost through navigational errors and crashes on landing.



Above: A plan showing the location of the Wireless Station, now a built up part of Dogsthorpe. The junction on the left is where the Blue Bell public house still stands.

A newspaper article appeared in the local press on 17th November 1933 entitled: '**Local Air-Raid Days Recalled – The Mystery Aerial at Dogsthorpe – Wireless Operator's Startling Discovery**':

'Interesting reference to work done during the war at the mystery wireless station tucked away in the field at Dogsthorpe, a mile or so from Peterborough, and which was only dismantled quite recently, was made at a lecture given to Peterborough and District Ironmongers and Hardware Assistant's Association by Mr. H. De A. Donisthorpe, of the General Electric Co. London, at the Dujon Hotel, Peterborough on Tuesday evening.

Few curious people raised the significance of the hidden station with its giant lattice masts and sausage aerials, but the majority associated the spot with mystery and never knew the nature of the work carried out. Mr. Donisthorpe was stationed at Dogsthorpe during the war and trained the

wireless staff there. He was thus able, in an interesting lecture on “Wireless and Wireless Valves,” to reveal some of the work done by the Dogsthorpe Station during the Great War.

A Startling Story

The station, one of three, was utilised for tracing the directions of Zeppelins who used their wireless continuously throughout their raids on Britain. The principle employed was similar to that used for tuning in on the present day portable set. By moving the aerial until the signals were at their strongest, the direction of the source of the signal could be determined by following the line of the aerial. The aerials of the other two stations were similarly manoeuvred and the point of intersection of the three lines indicated the exact position of the broadcasting source. This enabled the exact position of the Zeppelin from the station or the coast to be calculated.

FRIDAY, NOVEMBER 17 1933.

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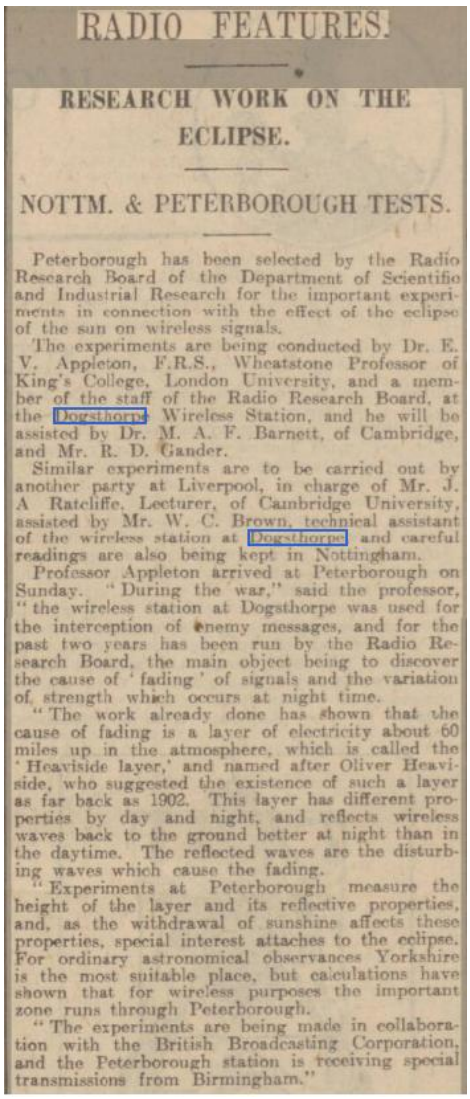
An amusing story concerning the Dogsthorpe Station was relayed by the lecturer. One dark night an assistant had been receiving messages when suddenly they stopped. Completely mystified, the only conclusion he could come to was that the Zeppelin was overhead, and on going outide he found he was right – the raider was overhead.

Many people who can look back on those dreaded days no doubt will rightly couple the incident with the night when the lights of Messrs Peter Brotherhood’s Works were extinguished a few minutes before the Zeppelin reached Peterborough...

There are something like five and a half million official listeners of wireless in the country and 11,863 listeners in Peterborough. On the introduction of the round valve in France at the beginning of the war over 200 enemy messages were intercepted every day against the 20 or so previously. The French were rather annoyed and produced their own ‘R’ Valve, which was also used extensively.’

Another newspaper article entitled ‘**Radio Features – Research Work on the Eclipse – Nttm. & Peterborough Tests**’, was published on 28th June 1927:

‘Peterborough has been selected by the Radio Research Board of the Department of Scientific and Industrial Research, for the important experiments in connection with the effect of the eclipse of the sun on wireless signals.



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The experiments are being conducted by Dr. E. V. Appleton, F.R.S., Wheatstone Professor of King's College, London University, and a member of the staff of the Radio Research Board, at the Dogsthorpe Wireless Station, and he will be assisted by Dr. M. A. F. Barnett, of Cambridge, and Mr. R. D. Gander.

Similar experiments are to be carried out by another party at Liverpool, in charge of Mr. J. A Ratcliffe, Lecturer, of Cambridge University, assisted by Mr. W. C. Brown, technical assistant of the wireless station at Dogsthorpe and careful readings are also being kept in Nottingham.

Professor Appleton arrived at Peterborough on Sunday. "During the war," said the professor, "the wireless station at Dogsthorpe was used for the interception of enemy messages, and for the past two years has been run by the Radio Research Board, the main object being to discover the cause of 'fading' of signals and the variation of strength which occurs at night time.

"The work already done has shown that the cause of fading is a layer of electricity about 60 miles up in the atmosphere, which is called the 'Heaviside layer,' and named after Oliver Heaviside, who suggested the existence of such a layer as far back as 1902. This layer has different properties by day and night, and reflects wireless waves back to the ground better at night than in the daytime. The reflected waves are the disturbing waves which cause the fading.

"Experiments at Peterborough measure the height of the layer and its reflective properties, and, as the withdrawal of sunshine affects these properties, special interest attaches to the eclipse. For ordinary astronomical observances Yorkshire is the most suitable place, but calculations have shown that for wireless purposes the important zone runs through Peterborough.

"The experiments are being made in collaboration with the British Broadcasting Corporation, and the Peterborough station is receiving special transmissions from Birmingham."

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